

HG-54HD 54-Foot Self-Supporting Tower

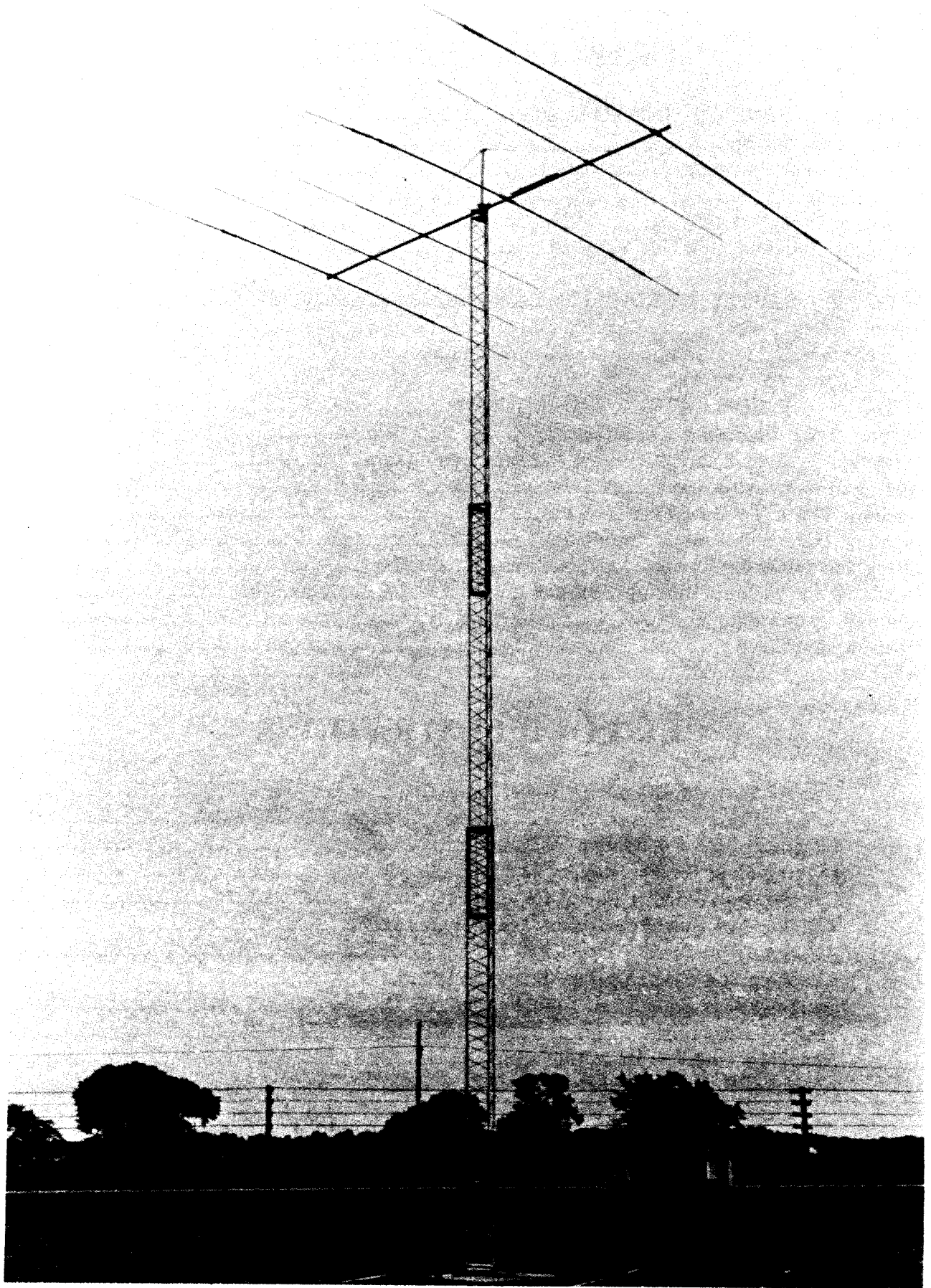


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Overall View of HG-54HD Tower
-ii-

CHAPTER 1

NOTE: If you are installing the Hy-Gain HDR-300 Rotator on your tower, you will not be able to nest the tower completely.

WARNING

Installation of this product near power lines is dangerous. For your safety, FOLLOW THE INSTRUCTIONS.

GENERAL DESCRIPTION

This model is a 54-foot self-supporting tower designed to support 16.0 square feet of antenna area with winds up to 60 mph. This all steel tower has a guide system that allows the tubing to be open at each end insuring complete galvanizing and total moisture drainage.

The tower is extended from its nested position by manual crank. A thrust bearing can be bolted to the top section allowing a 2" diameter mast.

UNPACKING AND UNCRATING

Be sure to check your tower for any freight damage or missing parts. If you find damage, notify the trucking line that delivered the equipment immediately and advise Hy-Gain of the damage. Send a copy of the freight damage claim to:

Hy-Gain

**Telex Communications, Inc.
8601 East Cornhusker Highway
P.O. Box 5579
Lincoln, Nebraska 68505-5579**

SPECIFICATIONS

Height:	
Extended	54 feet (16.45m)
Nested	21 feet (6.40m)
Guying.....	Self-supporting
Construction	All welded construction with leg guides and "W" configuration torsion resistant bracing.
Material	all steel
Plating	hot dipped galvanized
Wind Survival.....	60 mph (96.55 kmph) (fully extended with maximum load)
Antenna Load Limits	16.0 sq. ft. (1.488 sq. m)

EQUIPMENT

The HG-54HD tower is supplied complete, including reinforcing steel and base mount. The tower corresponds to the drawings contained in this manual. Refer to the Parts List section for a complete breakdown of parts.

The Parts List shows the standard commercial packaging. Any changes or modifications, if any, which may be incorporated as the result of special contractual agreements are covered under

EQUIPMENT REQUIRED BUT NOT SUPPLIED

DESCRIPTION	USE
1 Tool box with common tools.	Tower Assembly and Base Foundation
1 Measuring tape, 12	Base Foundation
1 Level	Base Foundation
3 Bolts, 3/4" x 2 1/2"	Base Foundation
Wood	Base Foundation
	Installation

WARNING

DO NOT CLIMB

DO NOT attempt to climb this tower under any circumstances! SERIOUS INJURY OR FATALITY may result. Keep hands and feet outside of tower. Do Not attempt to reach inside of the structure unless the tower has been fully retracted against the lower stops.

NOTE: The Hy-Gain Crank-Up Tower comes equipped with a rotator support plate for mounting a rotator inside the upper tower section. This plate will support approximately 150 pounds of vertical load when properly installed.

CHAPTER 2

SAFETY PRECAUTION

WARNING

Before you start installation of your tower, let us warn you of the danger of letting any part of your metal tower system touch electrical power lines - YOU MAY BE KILLED!

GENERAL SAFETY

Hundreds of people are killed each year because they don't use common sense when they install their towers or antennas. It happens more often than you realize. Someone falls off of a roof or gets electrocuted by touching a power line with an antenna tower or metal ladder.

There is no such thing as a good tower site if it is near electrical power lines. Unfortunately, most tower systems, and in many cases, the ladders used during an installation, are metal. If any metal tower part or ladder touches a power line, it completes an electrical path from the power line through the metal tower and the installer (YOU!).

DON'TS

Don't install any tower near power lines.

Don't install a tower on a windy day.

Don't try to do the job by yourself.

Don't try to catch the tower if it starts to fall.

Don't try to remove any metal objects from the power lines.

Don't be afraid to call the power company for advice when picking a tower site or removing a fallen tower from the power

lines

Don't remove winch handle; use safety chain with lock to secure.

Don't climb tower, use separate ladder or lower tower with gin pole for antenna rotator servicing.

Don't overload. The design load limit is 16 square feet of antenna on a 2 foot mast for winds up to 60 mph.

DO'S

Do install the tower away from power lines. Check the distance to the power lines before you start installing - we recommend you stay a minimum of twice the maximum length of the tower assembly away from all power lines.

Do install the tower on a calm day and assure yourself of having plenty of daylight to complete installation.

Do stay clear if the tower starts to fall or come in contact with power lines.

Do call the power company to remove fallen towers from power lines or to help pick out a safe antenna site.

Do crank tower down to retracted position when winds are anticipated to exceed 50 mph.

If someone is accidentally electrocuted, don't touch him or the tower if he is still in contact with the tower or downed power lines. Use a dry stick, like a broom handle or wooden ladder, etc. and in one sweep, push the person free from the tower or knock the wire away and off the victim. Have someone call an ambulance and the power company.

SITE SELECTION

The tower requires a concrete base approximately 42" x 42" x 72" (1067 mm x 1067 mm x 1829 mm) deep. Among the factors to be evaluated in selecting a tower site are the types of earth at the installation site and the nearness of power lines or overhanging tree limbs. Soil conditions around the tower foundation should allow access to the tower during all weather conditions.

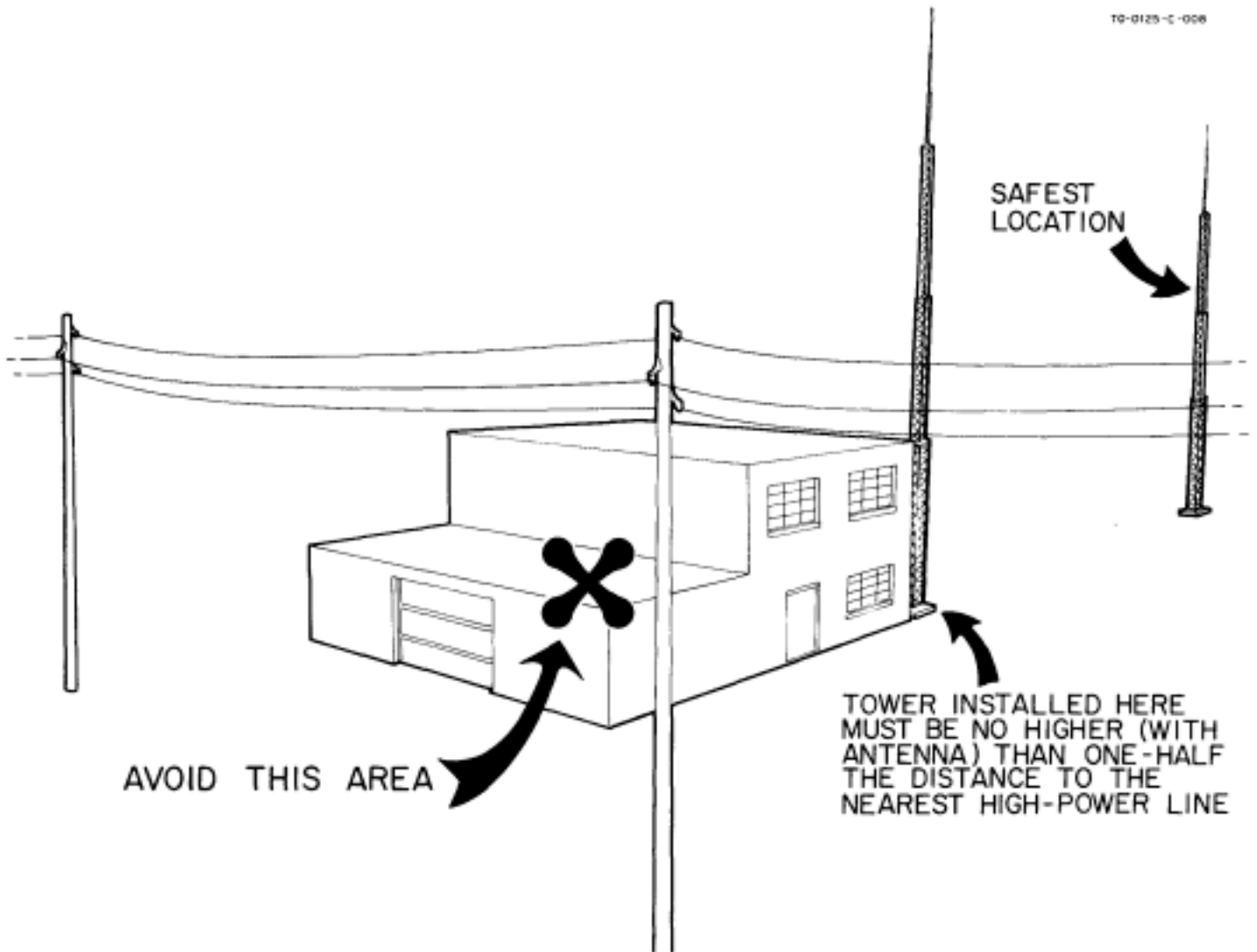


Figure 1
Safe Location of Tower

CHAPTER 3

INSTALLATION PROCEDURES

CHECKING BASE FOUNDATION



IMPORTANT
FOR PROPER ALIGNMENT, THE TABS ON THE TOWER BASE FOUNDATION ASSEMBLY MUST CORRESPOND WITH THE TABS ON THE TOWER.

During shipment or while in storage, damage may have resulted to the tabs on the tower base foundation assembly.

Before installation of this tower, check proper alignment of the tabs. To do this, set the tower horizontally on two supports. Attach the base foundation assembly to the tower using the three-quarter inch (3/4") hardware, as shown below.

If the tabs on the base foundation assembly are out of alignment, use a large hammer to realign.



Figure 2
Checking Base Foundation Assembly

PLANNING YOUR PROCEDURE

Good planning is a key to a successful and safe tower installation. If you're not sure about a careful, safe installation, don't try to do it yourself. Call for professional help (Yellow Pages under Towers or your local power company).

The tower should be as close as possible to its related equipment. Determine the best possible site while thinking about power lines, but also think about overhanging tree limbs that may be blown into the tower during high winds.



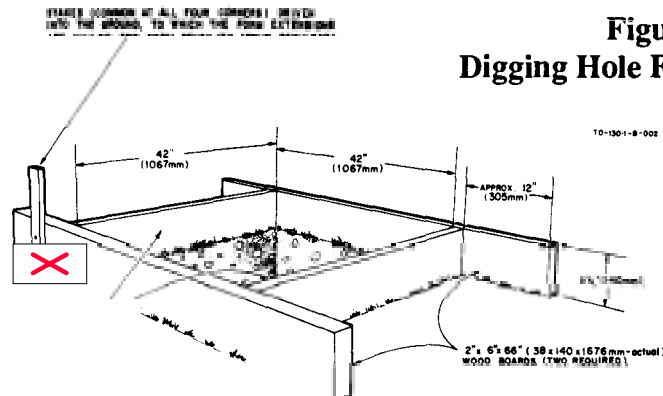
Dig a hole 42" (1067 mm) square by 72" (1829 mm) deep as shown in Figure 3.

WOOD FORMS CONSTRUCTION

Construct a wooden frame around the hole to support the base foundation assembly as shown in Figure 4.



Figure 3
Digging Hole For Foundation



In the U.S.A. the dimensions of lumber are listed, and referred to, as the size after it is rough-cut at the sawmill, prior to being dried, planed and sold on the market. A sample would be the two by four (2" x 4"), which after being dried and planed will measure 1 1/2" x 3 1/2" (38 x 89 mm), or a two by six (2" x 6") which will measure 1 1/2" x 5 1/2"

Orient your tower base in the direction your tower will be raised. The two parallel ears of the base foundation assembly will be in the hinged side.

The tabs on the tower base foundation assembly may have been knocked out of alignment during shipment or while in storage.

In order to support the base foundation assembly during concrete pouring, three wood supports are needed as shown in Figure 7.

Using a carpenter's level, check all points to make sure base foundation assembly is level. Drill a 3/4" hole in each wood support in line with the lower holes in the base foundation assembly as shown in Figure 7.

Attach the base foundation assembly to the ly wood supports using 3/4" bolts (not supplied).

BASE FOUNDATION STRUCTURE ASSEMBLY EAR
(TYPICAL THREE PLACES)

TO-130-1-8-00*

2" x 4" (38.90--Octu01) WOOD SUPPORT TO WHICH
ASSEMBLY EARS ARE BOLTED
(TYPICAL THREE PLACES)

*A' NUT

FORM FOR CONCRETE BASE *
APPROXIMATELY 5" (127mm)
OF ASSEMBLY EAR BURIED IN CONCRETE

Pour concrete carefully into hole. Make certain base assembly maintains the proper clearance from the outside edges of the hole. Refer to Figure 9.

The concrete shall be designed to provide a minimum 28 day strength of 2000 PSI and shall contain not more than 7 1/2 gallons of water per sack of cement.

After the concrete is poured, check base assembly, making sure it is level and it hasn't shifted during the pour.

TO-0130-8-

If the base is not level, tap the ears of the base with a hammer to level.

Let the base cure for at least one week before setting up tower!

Set your tower on the hinged side of the base, align the bottom holes of the tower with the bottom holes in the base assembly. Install a single 3/4" bolt in each of the two parallel

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LETTER	PRODUCT 130-1 DIMENSION
A	72" (1829 mm)
B	83/4 ¹¹ (222 mm)
C	6" (152 mm)
D	351/4 ¹¹ (895 mm)
E	34 ¹¹ (864 mm)
F	12" overlap (min.) (305 mm)
G	14" (356 mm)
H	10" (254 mm)

TO-0130-0-

The use of a thrust bearing, HG-TBT, Order No. 121B, is recommended for use on this tower if the combined weight of the antenna, mast and rotor is greater than 150 pounds. The use of this thrust bearing is also recommended on all systems used in areas where ice loading may be experienced.

Pull top tower section out only enough to allow the rotator stops to clear the top of the second tower section.

For a rotator that installs below the mounting plate, follow the steps below and refer to Figure 11, Detail A:

- 1. Set the rotator in the tower with the shaft bearing pointing up. If the mast brackets or clamps are attached to the shaft, they must be removed.**
- 2. Set the rotator mounting plate in the tower so it will set directly on the three stops welded to the inside of each tower leg.**
- 3. Bolt the rotator to the mounting plate using the mounting bolts supplied with the rotator.**
- 4. Assemble the rotator-to-mast clamp, mast platform and mast as shown in Figure 11, Detail A.**

For rotator mounted above the rotator mounting plate, follow these instructions and refer to Figure 11, Detail B:

- 1. Insert the rotator mounting plate in the tower so it rests on the mounting plate**

5 thru

- 5. Install the thrust bearing (if used) and secure it to the mast and tower according to instructions supplied with the bearing. Check for proper centering of mast.**
- 6. Mount your antenna(s) on the top of the mast. If you are using coax arms, tie your rotator cable and coax to the coax arms. Allow enough length of each cable for full tower extension.**
- 7. Connect your cable to the radio equipment, and rotator cable to controller to check for proper length.**

Lift tower into place with gin pole and block and tackle as shown in Figure 12

After tower is up, put all base bolts in place and secure tower in vertical position.

Attach winch assembly to tower winch plate as shown in Figure 13 and in the instructions enclosed with the winch.

Connect the cable to the winch as shown in Figure 14.

When lowering the tower, simply crank the winch in the opposite direction. Constantly check the upper section cables to make sure they remain taut as the tower is lowered.

A second person should watch the lowering sequence carefully to make sure all sections of the tower lower together.

A good way to tell is by watching the raising cable. If any of the cables become slack at any location, STOP. The tower section is binding up and must be cleared before lowering continues.

PROCEDURES FOR FREEING BINDING TOWER SECTIONS

Some causes for the sections to bind can

- 1. Bent tower braces during shipment or installation.**
- 2. A heavy object has been accidentally knocked into the tower, bracing after installation is complete.**
- 3. Excessive wind force can cause a tower section to bind up and not retract straight in line with the next larger tower section.**
- 4. Unbalanced antenna or other equipment.**
- 5. Foreign objects such as tree limbs, dirt or ice can reduce clearance between sections.**

RAISING AND LOWERING TOWER

Before cranking the winch to raise the tower, examine the raising cables to be certain that they are securely terminated and properly positioned in the cable sheave grooves.

The tower should raise with only moderate effort with the hand crank winch. If excessive force is required, check again for possible shipment damage. DO NOT force the tower up. It may become jammed in an extended position and won't retract under its own weight.

To correct these problems, crank the tower back up until the cable is tight. A soft, rubber faced hammer can be used on the tower legs while lowering the tower to jar the obstruction free. If you use a rubber mallet, tap only on the tower leg where the bracing meets the leg and tap as far up on the bottom section as you can reach. NEVER TAP ON ANY TOWER BRACING! ! ! See Figure 15.

If cable becomes slack again, raise the tower to tighten the cable and repeat the procedure.

Another procedure to free binding sections is to rotate the antenna to a different heading one or more times. Doing so can help solve the binding caused by 3 and 4 above.

If foreign objects must be removed to free the tower, DO NOT CLIMB THE TOWER! Be sure all cables are tight before removing the object.

If none of the previous methods work to free the tower, seek professional help. A snorkel or boom truck can be utilized to inspect, and correct the cause of the binding. Never leave the cable slack hoping the tower will free itself. If it does come free, it could collapse completely, damaging both the tower and the antenna.

All Hy-Gain towers are factory tested (fully extended and retracted) and inspected before being shipped, to insure proper operation.

To protect your installation and your radio equipment, the tower system must be properly grounded. Drive a 4'-8' ground rod as close as possible to the tower structure. Then connect a #8 (or larger) copper or aluminum wire between the base of the tower and the ground rod.

To maintain proper and safe operation, inspect and lubricate your tower at least once a year; more often if subject to heavy or frequent use. Always be sure your tower is in the retracted position before attempting any maintenance procedures.

Inspect all bolts for tightness including cable termination, winch and base bolts.

Inspect raising cables and replace if excessively kinked or frayed.

Inspect pulleys and pins for excessive wear and replace as required.

Place a few drops of light machine oil on all pulley bearings.

Refer to winch manual for proper lubrication of winch.

In order to insure maximum performance, a periodic inspection for any necessary preventive maintenance should be made. Check at least once annually and more frequently when the winch is exposed to an environment which is particularly dirty or wet. For continued smooth performance and increased life, occasionally grease gears, reel shaft, and handle threads. An occasional drop of oil on the drive shaft bearings is also recommended.

NOTE: DO NOT OIL OR GREASE BRAKE MECHANISM (Pressure Plate)

The winch finish can be protected and will provide longer service if it is periodically washed with water and then wiped with light oil or wax.